

## REMARKS

Claims 1-14 are all the claims pending in the application.

### I. Overview of the Office Action

Claims 1-12 stand rejected under 35 U.S.C. § 112, second paragraph.

Claims 1-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nanba (U.S. Patent No. 5,328,064).

### II. Rejections under 35 U.S.C. § 112

Claims 1-12 stand rejected under 35 U.S.C. § 112, second paragraph.

Claim 1-11 have been amended to alleviate Examiner's rejection under 35 U.S.C. § 112, second paragraph.

It is respectfully requested that the rejection of claims 1-12 under 35 U.S.C. § 112, second paragraph, be withdrawn.

### III. Rejections under 35 U.S.C. § 103(a)

Claims 1-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nanba (U.S. Patent No. 5,328,064). Applicants respectfully traverse this rejection.

**Claim 1** recites among other elements: "a molten steel flow hole portion, in which a plurality of independent members comprising at least one of protrusion portions and concave portions discontinuous in both directions parallel and perpendicular to a molten steel flowing direction are disposed."

**1. Nanba does not teach or suggest a plurality of independent protrusion portions or concave portions discontinuous in both directions parallel and perpendicular to a molten steel flowing direction**

Nanba discloses the nozzle for continuous casting that has a plurality of steps in the molten steel pouring hole of the nozzle. The dimension of the inside diameters of the steps to the inside diameter  $d$  of the main pipe is  $d_1 > d_2 > d$  or  $d_1 > d_2 > d_3 > d$ . (Abstract, col. 2, lines 20-30). The steps are arranged in the pouring direction of the molten steel in the order of the inside diameters, from the largest to the smallest. (Col. 1, lines 53-55).

Therefore, Nanba teaches a conventional multistep nozzle in which the stepping surfaces are *circularly arranged* on the inside surface of the nozzle. Each stepping surface of Nanba is fully continuous in the direction perpendicular to the steel flowing direction. Nanba does not teach or suggest steps discontinuous in *both directions parallel and perpendicular to a steel flowing direction*. Moreover, each stepping surface of Nanba is continuous in the direction parallel to steel flowing direction, at least for a length of the step. Nanba does not teach or suggest plural independent separated protrusion portions or concave portions.

## **2. Nanba does not teach or suggest a size of the height and length of the steps**

The Examiner asserts that Nanba discloses a size definition for each of the protrusion portions and/or concave portions. (See Office Action, page 3, lines 2-3).

As discussed above, Nanba discloses the steps arranged in the pouring direction of the molten steel in the order of the inside diameters, from the largest to the smallest. (Col. 1, lines 53-55). Nanba does not teach or suggest a size definition for each step, as asserted by the Examiner. Specifically, Nanba does not teach or suggest how to size the inside diameters. Moreover, Applicants carefully reviewed Nanba and did not find any teaching or suggestion of how to size *both* the inside diameter of the step and the base lengths of the steps. If the Examiner maintains his assertion, Applicants respectfully request the Examiner point out where exactly Nanba discloses how to size each step. Otherwise, it is respectfully requested that the rejection over Nanba be withdrawn.

## **3. Claim 1 is not obvious over Nanba**

The Examiner contends that Nanba does not teach the size of the protrusion portions and/or concave portions to satisfy the specific expressions of  $H \geq 2\text{mm}$  and  $L > 2 \times H$ . However, the Examiner asserts “[i]t would have been obvious to one with ordinary skill in the art at the time the invention was made to utilize a proportional formula to size a protrusion or a concave portion size since our reviewing courts have held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.” *Gardner v. TEC*

*Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984). (See Office Action, page 3, 1<sup>st</sup> incomplete paragraph).

As discussed in MPEP § 2144, if the facts in a prior legal decision are sufficiently similar to those in an application under examination, the Examiner may use the rationale used by the court. However, if the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on the rationale used by the court to support an obviousness rejection. MPEP, § 2144(III).

The Applicants of the present application demonstrated by multiple examples discussed in the specification that the particular dimensions of the protrusions/concaves are critical for the invention. Therefore, the Examiner improperly relies solely on the decision and facts of *Gardner* to establish obviousness. Accordingly, Applicants respectfully submit that the Examiner did not establish a *prima facie* obviousness.

**4. Finally, Amendment to claim 1**, which recites “wherein the independent members make an inner surface area of the molten steel flow hole portion rough so that an inner diameter of the molten steel flow hole portion becomes variable over the inner surface of the rough area” is not taught or suggested by Nanba.

**5. In summary**, because Nanba does not teach or suggest at least “a molten steel flow hole portion, in which a plurality of independent members comprising at least one of protrusion portions and concave portions discontinuous in both directions parallel and perpendicular to a molten steel flowing direction are disposed” and “wherein the independent members make an inner surface area of the molten steel flow hole portion rough so that an inner diameter of the molten steel flow hole portion becomes variable over the inner surface of the rough area,” **claim 1 and dependent claims 2-12** distinguish patentably and unobviously over Nanba.

#### **IV. New claims**

To provide more varied protection, Applicants add **claims 13-14** which are patentable at least by virtue of their dependencies and additional features set forth therein. No new subject matter has been entered.

**CONCLUSION**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

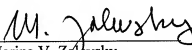
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